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Atmospheric Measurement Techniques Discussions

Interactive comment on "Influence of environmental humidity on measurements of benzene in ambient air by transportable GC-PID" *by* Cristina Romero-Trigueros et al.

Anonymous Referee #1

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General comments.

The manuscript by Romero-Trigueros et al. address an important issue regarding air quality monitoring of benzene by transportable GC-PID. The tests are reported clearly and the implications discussed appropriately. However, my main concerns about the manuscript are:

1) Focusing on benzene: It would be more relevant to have investigated all the species analysed by this specific GC-PID, often referred to as "BTEX analyser" (for benzene, toluene, ehtylbenzene, and xylenes).

2) Previously reported influence of pressure: A previous publication form the same authors in a different journal reported that data from this type of GC-PID might be affected by pressure difference.

These issues hint at a disputable publication strategy spreading results of the characterization of this monitor in several manuscript, increasing the publication count of the authors, but diluting the relevant information for the users of this type of monitors. Therefore, I would recommend to reject this manuscript.

Specific comments.

- The content of the manuscript is well reflect in the abstract but it has been omitted that temperature influence has also been tested. Even though the result is that the temperature has no influence, it might be worth to emphasize this result in the abstract (or even in the title of the manuscript).

- page 3, line 25-26: Tests with temperature should have their dedicated experimental section and the results should be reported only in section 3.2.

- page 4, line 7: It should be clarified (possibly in the introduction) that the EN Standard the authors are referring to citation "EU, 2008".

- page 5, line 7: The sentence starting with "This influence has a negative sign,..." should be revised as the wording seems odd.

- page 6, line 4-5: Statistics have been used but are poorly described in this one sentence. What is the value for p=0.05 and 14 degrees of freedom and what are n1 and n2? This should be improved and clarified for readers that are not familiar with such statistic tools.

- page 6, line 20-24: It could be discussed in a bit more detailed how the results

reported in the literature might have suffered from the presented influence of RH, given the reported environmental conditions of the measurements.

- from page 6, line 25: This whole paragraph is a bit strange to me. It is not clear if the discussion is related to findings (or speculation?) of the authors or from the literature (in which case, references would be missing). The paragraph starts with "have been proved", but then rest reads like possible explanation for the observed influence of humidity on the results. Moreoever, if the effect of water on preconcentration and chromatographic separation is not discussed (e.g. baseline, peak shapes, etc.) because is thought not to be relevant, this should be briefly motivated. Do authors expect the water concentration at the detector when benzene elutes to be the same as the ambient water concentration during sampling?

- page 7, line 25: If "presumably" TEX are also affected, authors should at least mention briefly why they did not include them in their present work and if they are planning to do it in the near future. If they do have results for these compounds, they should not be withdrawn and included in the present manuscript.

Technical corrections

- page 1, line 25: typo "h0ematologic"

- page 2, line 28: Trigueros et al., 2016 is missing in the bibliography

- page 3, line 12-13: use either commas or long dash (–) to separate "the ratio of the actual mass of water vapour present in the sample to the mass of the dry air"

- page 4, line 5: replace "pressure" with "humidity"

- page 4, line 20: I suggest to use "with different absolute humidity (AH) values"

- page 5, line 20: Word order: "the initial temperature of the sample being irrelevant in

the whole process"

- page 9, line 24: This is not a DOI, this is an URL.

- page 9, line 32: Remove "http://dx.doi.org/".

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